

UNCLASSIFIED

AD _ 401 281 _

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION, ALEXANDRIA VIRGINIA



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

401 281

(5) 17511

S/073/62/028/009/001/011
A057/A126

ASIA FILE COPY

STEP

AUTHORS: (8) Shokol, A. A., Andrusenko, L. P.

TITLE: (6) Investigation of the conditions of germanium precipitation with magnesium and iron

PERIODICAL: (15) TRANS. FROM Ukrainskiy khimicheskiy zhurnal, v. 28, no. 9, 1962, pp. 1009 - 1013

TEXT: Optimal conditions (concentration of Ge, pH, and the consumption factor of precipitants) for the precipitation of germanium by magnesium and/or iron were studied at the Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry AS UkrSSR). The precipitated Ge was filtered off and in the filtrate the non-precipitated Ge was colorimetrically determined with phenylfluoron. The following results were obtained: The maximum precipitation (98.4%) of Ge by a magnesia mixture at a concentration of 138.5 mg Ge/l occurs at pH = 12.0. In the absence of ammonium salts the maximum is lower (89.2 - 91.8%) and lies at pH 9.6 - 11.6. Varying the ratio Mg : Ge from 0.1 to 50, an almost complete (99.8%) precipitation of Ge was achieved at a pH of about 10 and a 15fold excess of Mg. A surplus of sodium hydroxyde does

Card 1/3

not affect these precipitations, because apparently magnesium orthogermanate is formed and no adsorption of Ge on magnesium hydroxyde occurs. Experiments with germanium precipitation by iron hydroxyde (as collector) at a pH of about 8, by varying the Fe/Ge ratio (0.1 - 50) showed a complete precipitation of Ge (1.25 mg Ge/100 ml) in the presence of a 25fold excess of iron. In this case a surplus of sodium hydroxyde showed a negative effect upon the Ge precipitation, apparently due to adsorption processes. Germanium precipitation by magnesium in the presence of iron hydroxyde (1.25 mg Ge + 6.25 mg Mg in 100 ml solution) at a pH of about 8 showed a 99.9% precipitation of Ge, if at a 5fold Mg excess a 10 - 15fold excess of iron was present or a 100% precipitation of Ge if at a 15fold iron excess a 2fold excess of Mg was present. The pH should not drop below 8. Experiments at a constant ratio Mg : Ge = 5 : 1 showed that with an increasing amount of Ge the quantity of iron necessary for a complete precipitation of Ge decreases, but only at a concentration of more than 10 mg Ge/l a complete precipitation of Ge can be attained, because in diluted solutions Ge remains partly dissolved as magnesium orthogermanate. A complete precipitation, even at low Ge concentrations (0.1 mg/l) is effected at a ratio Ge : Fe = 1 : 25 (or more), or in the presence of a 2fold surplus of Mg at only a 10 - 15fold excess of iron at

Card 2/3

pH > 8. There are 3 figures and 6 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry, AS UkrSSR)

SUBMITTED: July 21, 1961